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LIMITATION CHANGES

TO:

Approved for public release; distribution is unlimited.

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AUTHORITY

CSS memo dtd 22 Mar 2013

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SECURITY CLASSIFICATION: UNCLASSIFIED

INFORMAL REPORT

VEHICULAR COMPONENTS & MATERIALS DIVISION
MATERIALS BRANCH

TITLE: TRANSMISSION CLUSTER GEAR (M151 VEHICLE)

REPORT NO. 11512(I) (PART 5 OF 5 PART REPORT)

TECHNICAL LIBRARY
REFERENCE COPY

DATE: 6 MARCH 1972

Mar 72

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Warren, MI 48397

CRN: RM41342B (CN: PT-8-72)

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SECURITY CLASSIFICATION: UNCLASSIFIED

4/21/1967

US ARMY TANK-AUTOMOTIVE COMMAND
VEHICULAR COMPONENTS AND MATERIALS DIVISION
MATERIALS BRANCH

Report No. 1151(I)
Date: 6 March 1972

TITLE: Transmission Cluster Gear (M151 Vehicle)

OBJECT:

Metallurgical evaluation.

MATERIAL SUBMITTED:

Quantity 1, P/N 8754341, Manufacturer

American Motors General, Contract No. DAAE07-70-C-4861,
Sub-contract: Chrysler-Spain
Submitted by AMSTA-QST.

TEST RESULTS:

1. Visual Examination:

The teeth of the 16 tooth gear area were chipped severely on front leading edge and slightly on the trailing edge. The faces of the other three gear sections revealed some wear but no visible damage. The roots of the teeth showed evidence of shot peening. The part number, 7536154, was found stamped into the rear surface face of the large gear segment.

2. Magnetic Particle Inspection:

<u>Sample No.</u>	<u>Crack Indications</u>	<u>Location</u>
<u>1</u>	<u>None</u>	

3. Hardness Test: (See Table(s) __, __, __)

Scale Used: Rockwell "C" - R "A"

Required: Surface Hardness RA 80-83
 Core Hardness RC 25-38
 Effective Case Depth .03" - .04"
 Hardness at _____ Depth _____

<u>SAMPLE GEAR NO.</u>	<u>FOUND SURFACE HARDNESS</u>	<u>CORE HARDNESS</u>	<u>EFFECTIVE CASE DEPTH RC 50 @, INCH</u>	<u>HARDNESS AT DEPTH</u>
<u>1 (16T)</u>	<u>RA 83</u>	<u>RC 36</u>	<u>PL .040", RL .036"</u>	
<u>2 (23T)</u>	<u>RA 80</u>	<u>RC 27</u>	<u>PL .034", RL .021"</u>	
<u>3 (39T)</u>	<u>RA 82</u>	<u>RC 27</u>	<u>PL .042", RL .026"</u>	
<u>4 (47T)</u>	<u>RA 81</u>	<u>RC 36</u>	<u>PL .044", RL .036"</u>	
Ends	<u>RA 81-84</u>		<u>Spec RA 81 min.</u>	

4. Micro-Examination:

Microstructure, Required: Case Harden - Marquench

<u>SAMPLE NO.</u>	<u>CASE</u>	<u>CORE</u>	<u>CASE DEPTH INCH</u>
<u>All gears segments</u>	<u>Cementite on tips temp. fine to med. acicular martensite with retained austenite a little bainite on surface pitch to root</u>	<u>Tempered low carbon martensite with ferrite and bainite at grain boundaries</u>	

5. Chemical Analysis: (See Table(s) __, __, __)

Required Material: 8620H, 8622H or 8720H
opt. 8622H, 8620H or 8720H

<u>SAMPLE NO.</u>	<u>MATERIAL</u>
<u>1</u>	<u>8620H</u>
_____	_____
_____	_____
_____	_____
_____	_____

See Inclosure 1

6. Additional Tests:

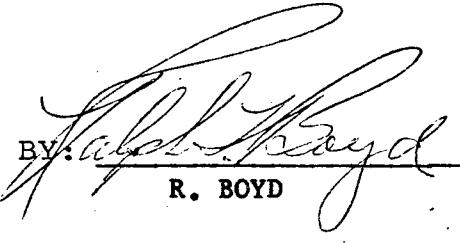
COMMENTS:

1. The case depth on gear 23T was below lower limit of .03" at the root line. The same was true for 39T gear.

2. The microstructure of the surface areas revealed a thin layer (.0008") of upper bainite. In addition, the (cementite) massive carbides on the tips are objectionable for impact loading as they are brittle.

All tests were conducted on equipment bearing current certification of calibration.

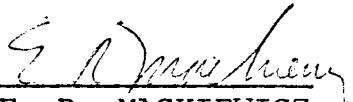
WRITTEN BY:


R. BOYD

REVIEWED BY:


F. N. KISBANY
C, Metals Sec

APPROVED BY:


E. R. MACKIEWICZ
Actg C, Mat Br

CHEMICAL ANALYSIS

TO C, Metals Function
(AMSTA-RKMM)
ATTN: Mr. R. Boyd

25 February 1972
Mr. Rodgers/mk/31238

FROM Chemical & Spectrographic Unit

1. Sample: Gear Cluster RM41342B (PT-872)

2. Results:

<u>ELEMENT</u>	<u>GEAR</u>
Carbon	.20
Sulfur	.023
Phosphorous	.008
Manganese	.90
Silicon	.22
Chromium	.44
Nickel	.61
Molybdenum	.23
Vanadium	Trace

Robert J. Rodgers
CHEMIST

APPROVED J. D. Rodriguez

Inclosure 1

REQUEST FOR SERVICES
(ASPR 01-1900)

15 Feb 72

Suspense date
21 Days after
receipt of request

TO

C, Program Execution Branch
(AMSTA-RPE)

FROM

C, Test Br (AMSTA-QST)
System Performance Assmt Div
Product Assurance DirectorateHP
2-16-72

Contract No.

DAAE07-70-C-4861

AMCMS

721113.2331

CRN

A.I.T.

RM41342B

Contractor & Address
Ford Motor Company

AM General

Material

1 ea differential pinion shaft 11660492
1 ea gear hypoid bevel drive 11660493
1 ea synchronizer insert 7059129
1 ea insert retainer ring 7059128
1 ea gear assy cluster 8754341

Specification

Control No.

PT-8-72

Drawing No.

Tests Required Evaluation of Metallurgical requirements to applicable part drawings and examination of damaged area

Tests (or Inspections) are to be conducted under 02 Priority. In the event of any discrepancy or failure during test, delay or inability to meet the suspense date, notify this office, AMSTA-QST ATTN: Mr. DuBay or Mr. Finnie, ext. 2346 immediately by telephone and followed by DF within five days stating reason for delay or failure.

All test and measuring equipment used on this project must be calibrated and must bear a current valid DA Label 80 (AMCR 700-9). Certification of calibration must be reflected in the final report.

Request test reports be forwarded to C, Test Br (AMSTA-QST); upon completion of tests, materials to be disposed of through normal supply channels.

Laboratory AMSTA-RKMM

Signature

163 Hrs 1850

William H. Carbary

Labor Estimate 3016. -

WILLIAM H. CARBARY

Actual Cost

NOTE: If suspense date cannot be met, an interim reply is requested.

TO

FROM

Comments

COMPLETION DATE: 3-7-72

RKMM

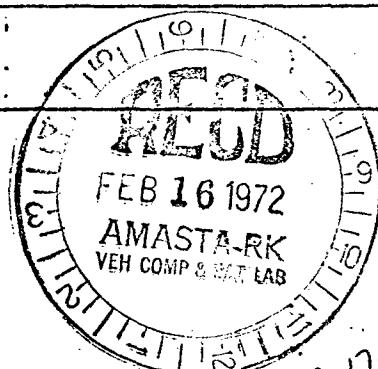
ACTUAL HOURS USED: 163

DMA-QA
Code AA

MATERIAL \$ EXPENDED: 163

REPORT NO.: 11512 (1) (Part 1-5)

SIGNATURE:

2-17-72
MK



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
PROGRAM EXECUTIVE OFFICE
COMBAT SUPPORT & COMBAT SERVICE SUPPORT
6501 EAST 11 MILE ROAD
WARREN, MICHIGAN 48397-5000

SFAE-CSS

22 MAR 2013

MEMORANDUM FOR Defense Technical Information Center (DTIC-OQ), 8725 John J. Kingman Road, Fort Belvoir, VA 22060-6218

SUBJECT: Change of Classification Level to 4M151 Truck Documents

1. Reference Defense Technical Information Center (DTIC) Infosec "RE: M151A2 Documents retrieval and review" direction email of 14 December 2012.
2. In accordance with the above reference, please change the classification and distribution level for the following documents:
 - a. Document.
 - (1) The DTIC AD#: ADB271644
 - (2) Title: M151 Transmission Clutch Hub Insert – P/N 7059129
 - (3) Date of Document: 29 February 1972
 - (4) New Distribution/Classification: Distribution A. Approved for public release; distribution is unlimited.
 - (5) Reason for Change: This document has been reviewed for Operations Security (OPSEC) and has been deemed to contain no OPSEC concerns. The documents are for the M151 Truck that has not been in the military inventory since the early 1980s; the vehicle and associated documents are obsolete.
 - (6) Date of Change: Immediately
 - b. Document 2.
 - (1) The DTIC AD#: AD0474825
 - (2) Title: ENGINEER DESIGN TEST OF TRUCK, UTILITY, 1/4-TON, 4X4, M151 (RIDE AND HANDLING CHARACTERISTICS)
 - (3) Date of Document: 15 December 1965

SFAE-CSS

SUBJECT: Change of Classification Level to 4M151 Truck Documents

(4) New Distribution/Classification: Distribution A. Approved for public release; distribution is unlimited.

(5) Reason for Change: This document has been reviewed for OPSEC and has been deemed to contain no OPSEC concerns. The documents are for the M151 Truck that has not been in the military inventory since the early 1980s; the vehicle and associated documents are obsolete.

(6) Date of Change: Immediately

c. Document 3.

(1) The DTIC AD#: AD0857240

(2) Title: Product Improvement Test of Truck, Utility, 1/4-TON, 4X4, M151 Series with Modified Independent Rear Suspension System

(3) Date of Document: 27 June 1969

(4) New Distribution/Classification: Distribution A. Approved for public release; distribution is unlimited.

(5) Reason for Change: This document has been reviewed for OPSEC and has been deemed to contain no OPSEC concerns. The documents are for the M151 Truck that has not been in the military inventory since the early 1980s; the vehicle and associated documents are obsolete.

(6) Date of Change: Immediately

d. Document 4.

(1) The DTIC AD#: ADB273320

(2) Title: Bonded vs. Riveted Brake Lining Test

(3) Date of Document: 12 January 1977

(4) New Distribution/Classification: Distribution A. Approved for public release; distribution is unlimited.

SFAE-CSS

SUBJECT: Change of Classification Level to 4M151 Truck Documents

(5) Reason for Change: This document has been reviewed for OPSEC and has been deemed to contain no OPSEC concerns. The documents are for the M151 Truck that has not been in the military inventory since the early 1980s; the vehicle and associated documents are obsolete.

(6) Date of Change: Immediately

e. Document 5.

(1) The DTIC AD#: AD0810372

(2) Title: Product Improvement Test of Truck, Utility, 1/4-TON, 4X4, M151 Modified with Solid Rear Axle

(3) Date of Document: March 1967

(4) New Distribution/Classification: Distribution A. Approved for public release; distribution is unlimited.

(5) Reason for Change: This document has been reviewed for OPSEC and has been deemed to contain no OPSEC concerns. The documents are for the M151 Truck that has not been in the military inventory since the early 1980s; the vehicle and associated documents are obsolete.

(6) Date of Change: Immediately

f. Document 6.

(1) The DTIC AD#: ADB271624

(2) Title: Transmission Cluster Gear (M151 Vehicle)

(3) Date of Document: 06 March 1972

(4) New Distribution/Classification: Distribution A. Approved for public release; distribution is unlimited.

(5) Reason for Change: This document has been reviewed for OPSEC and has been deemed to contain no OPSEC concerns. The documents are for the M151 Truck that has not been in the military inventory since the early 1980s; the vehicle and associated documents are obsolete.

SFAE-CSS

SUBJECT: Change of Classification Level to 4M151 Truck Documents

(6) Date of Change: Immediately

3. The Point of Contact for this action is Robert Anick, Sr, email:
robert.d.anick.civ@mail.mil or COM (586) 282-8448.

Kevin M. Fahey
Kevin M. Fahey
Program Executive Officer,
Combat Support & Combat Service Support